Claims:

1. A process for coating a material surface, comprising the steps of:
(a) applying to the material surface a tie layer comprising a polyionic material;
(b) covalently binding a bifunctional compound comprising an ethylenically unsaturated double bond to the tie layer; and
(c) graft polymerizing a hydrophilic monomer onto the compound comprising the ethylenically unsaturated double bond.

2. A process according to claim 1, wherein the material surface is the surface of an organic bulk material, in particular the surface of a biomedical device comprising an organic bulk material.

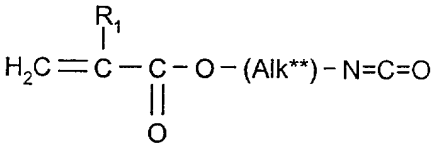
3. A process according to claim 1 or 2, wherein the tie layer of step (a) consists of one single polyionic material.

4. A process according to claim 1 or 2, wherein the tie layer of step (a) includes at least one bilayer comprising a polycationic material and a polyanionic material.

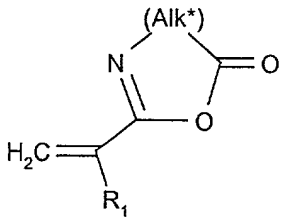
5. A process according to any one of claims 1 to 4, wherein the polyionic material of the tie layer comprises one or more polymers selected from the group consisting of a poly(allylamine hydrochloride), a poly(ethyleneimine), a poly(acrylic acid), and a poly(methacrylic acid).

6. A process according to any one of the claims 1 to 5, wherein the covalent bonding between the tie layer and the bifunctional compound comprising an ethylenically unsaturated double bond occurs via reaction of a hydroxy, amino, alkylamine, thiol or carboxy group, of the tie layer with an isocyanato, azlactone, epoxy, carboxy anhydride, carboxy or hydroxy group, of the ethylenically unsaturated compound.

7. A process according to any one of claims 1 to 6, wherein the ethylenically unsaturated compound is of formula



(2a),



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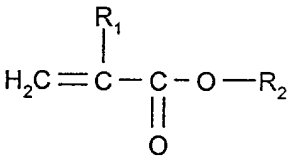

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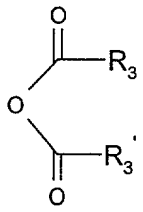

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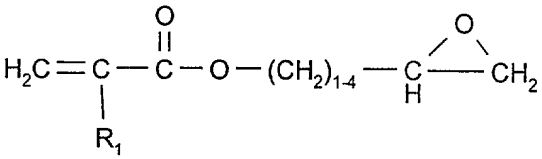

(2e).

wherein

R_1 is hydrogen, C_1-C_4-alkyl or halogen;

R_2 is hydrogen, unsubstituted or hydroxy-substituted C_1-C_6-alkyl or phenyl;

R_3 and R_3' are each an ethylenically unsaturated radical having from 2 to 6 C-atoms, or R_3 and R_3' together form a bivalent radical -C(R_4)=C(R_4')- wherein R_4 and R_4' are each independently hydrogen, C_1-C_4-alkyl or halogen and

(Alk*) is C_1-C_6-alkylene, and (Alk**) is C_2-C_{12}-alkylene.

8. A process according to claim 7, wherein, in step (b), the compound comprising an ethylenically unsaturated double bond is of formula (2a).

9. A process according to any one of the claims 1 to 8, wherein, in step c), the hydrophilic monomer is selected from the group consisting of acrylamide, acrylic acid, methacrylic acid, hydroxyethyl methacrylate, hydroxyethyl acrylate, methacrylamide, N,N-dimethylacrylamide, allylalcohol, N-vinylpyrrolidone and N,N-dimethylaminoethyl acrylate.

10. A process according to any one of claims 1 to 9, wherein in step (c), the monomer comprises one or more different monomers at least one of them comprising a reactive group.

11. A process according to any one of the claims 1 to 10, wherein in step (c), the monomer comprises a reactive group,
(i) said reactive groups are reacted with a further compound comprising an ethylenically unsaturated double bond,
(ii) a hydrophilic monomer and optionally a co-monomer having a crosslinkable group are graft-polymerized to said ethylenically unsaturated double bond, and
(iii) in case crosslinkable groups being present in step (ii), crosslinking of said groups is initiated.

12. A process according to claim 11, wherein, in step (i), the further compound comprising an ethylenically unsaturated double bond is a compound of formula (2a)-(2e) according to claim 7.

13. A process according to claims 11 or 12, wherein, in step (ii) the hydrophilic monomer is selected from the group consisting of acrylic acid, acrylamide, N,N-dimethylacrylamide and N-vinylpyrrolidone and no co-monomer having a crosslinking group is present.

14. A coated material that is obtainable by the process of any one of the claims 1 to 13.

15. A coated material according to claim 14, which is a biomedical device.

16. A coated material according to claim 15, which is an ophthalmic device.

17. A coated material according to claim 16, which is a contact lens, intraocular lens or artificial cornea.